

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) An apparatus for handling sheets, comprising:

a sheet transfer member ~~being~~ that is movable, and ~~having~~ which includes a transfer surface for contacting a selected ~~contactable with one of the sheets so that the one of the sheets is transferred by the sheet transfer member and transferring the~~ selected sheet,

a sheet supporting surface area ~~being~~ contactable with the one of the ~~selected sheet transferred by the sheet transfer member, said sheet supporting surface area extending to be~~ contactable with the one of ~~such that it contacts the~~ sheet between the transfer surface and the information reading point, and

an information reader arranged to face ~~to the one of the sheet transferred by the sheet transfer member and having in~~ the selected sheet and including:

_____an information reading range within which ~~including an information reading point, in which reading range an information is securely readable from the one of the sheets,~~ selected sheet, and

_____an information reading point at which information is read, said information reading point being located within the information reading range,

wherein as seen in a view direction perpendicular to a thickness direction of ~~the one of the sheets and a transferred direction of the one of the sheets transferred by the~~ selected sheet transfer member, a tangential line, at of a boundary point of the transfer surface of the sheet transfer member from which ~~boundary point the one of the sheets~~ selected sheet starts to separate away from the transfer surface

surface, extends in a side area of an imaginary straight line passing the information reading point and the boundary point, ~~which side area including the sheet supporting surface area,~~ and

wherein the tangential line intersects the sheet supporting surface area as seen in the view direction to press the ~~one of the sheets~~ selected sheet against the sheet supporting surface ~~area~~ area.

wherein the boundary point corresponds to a point at which the sheet transfer member contacts the selected sheet, and

wherein the boundary point and the sheet supporting surface area are distant from each other in a direction perpendicular to the imaginary straight line.

2. (Cancelled)

3. (Currently Amended) An apparatus according to claim 1, wherein the sheet supporting surface area extends to guide therealong to the information reading range the ~~one of the sheets transferred by the sheet transfer member~~ selected sheet.

4. (Cancelled)

5. (Cancelled)

6. (Previously Presented) An apparatus according to claim 1, wherein the tangential line is prevented from extending parallel to the imaginary straight line.

7. (Currently Amended) An apparatus according to claim 1, further comprising a supplemental sheet transfer member ~~being~~ that is movable, and which includes ~~having~~ a supplemental transfer surface contactable with the ~~one of the sheets so that the one of the sheets is transferred by~~ selected sheet to facilitate transfer by the supplemental sheet transfer member, wherein a tangential line of a boundary ~~the boundary~~ point of the transfer surface of the sheet transfer member from which boundary point the ~~one of the sheets starts to separate away from the transfer surface of the sheet transfer members intersects with a tangential line of a~~ second boundary point of the supplemental transfer surface of the supplemental sheet transfer member from which boundary point the ~~one of the sheets~~ the selected sheet starts to separate away from the supplemental transfer surface of the supplemental sheet transfer member as seen in a view direction perpendicular to a thickness direction ~~of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer members~~ selected sheet.

8. (Currently Amended) An apparatus according to claim 1, further comprising:
a supplemental sheet transfer member ~~being~~ that is movable and having which includes a supplemental transfer surface contactable with the ~~one of the sheets so that the one of the sheets is transferred~~ selected sheet to facilitate transfer by the supplemental sheet transfer member, and
first and second press members ~~being opposed to~~ respectively opposing the sheet transfer member and supplemental sheet transfer member respectively in such a manner ~~that the one of the sheets is allowed to be~~ such that the selected sheet is pressed between the sheet transfer member and the first press member in a first

press direction and between the supplemental sheet transfer member and the second press member in a second press direction,

wherein the first and second press directions intersect ~~with each other as~~ seen in a view direction perpendicular to a thickness direction ~~of the one of the sheets~~ and a transferred direction of the ~~one of the sheets transferred by the sheet transfer member~~selected sheet.

9. (Currently Amended) An apparatus for handling sheets, comprising:
a movable sheet transfer member being movable, and having including a transfer surface ~~contactable with~~ for contacting a selected one of the sheets ~~so that the one of the sheets is transferred by the sheet transfer member and transferring the~~ selected sheet,

a sheet supporting surface area ~~being contactable with the one of the sheet~~ transferred by the sheet transfer member for contacting the selected sheet,

an information reader arranged to face to ~~the one of the sheet transferred by the sheet transfer member~~ the selected sheet and having in ~~including~~:

_____an information reading range within which ~~including an information~~ reading point, in which ~~reading range an information is securely readable from the one of the sheets~~selected sheet, and

_____an information reading point at which information is read, said information reading point being located within the information reading range.

a press member ~~being opposed to~~ opposing the sheet transfer member in such a manner ~~that the one of the sheets is allowed to~~ such that the selected sheet can be pressed between the sheet transfer member and the press member at a boundary point in a press direction,

wherein an imaginary straight line passing the boundary point in a direction perpendicular to the press direction intersects the sheet supporting surface area as seen in a view direction perpendicular to a thickness direction ~~of the one of the sheets~~ and a transferred direction of the ~~one of the sheets transferred by the sheet transfer member~~ selected sheet, and

wherein the pressing direction is parallel to another imaginary straight passing the center of the sheet transfer member and the center of the press member.

10. (Currently Amended) An apparatus according to claim 1, further comprising:

a press member ~~being opposed to~~ opposing the sheet transfer member in such a manner that the ~~one of the sheets is allowed to be pressed for pressing the selected sheet~~ between the sheet transfer member and the press member, wherein the

said press member has including a press surface for contacting the selected sheet ~~contactable with the one of the sheets so that the one of the sheets is allowed to be pressed and pressing the selected sheet~~ between the press surface and the transfer ~~surfaces~~ surface, and

wherein a compression resistance surface rigidity of one of the press and transfer surfaces is different from that of the other ~~one of the press and transfer surfaces~~ in such a manner that a tangential line of a boundary point of at least one of the press and transfer surfaces from which boundary point the ~~one of the sheets starts to separate away from the at least one of the press and transfer surfaces~~ extends in the side area of the imaginary straight line.

11. (Original) An apparatus according to claim 1, wherein the sheet transfer member is a roller rotatable on an rotational axis.
12. (Original) An apparatus according to claim 1, wherein the sheet transfer member is a belt rotatable along an annular course.
13. (Cancelled).
14. (Currently Amended) An apparatus according to claim 1, wherein the information reader ~~has~~includes a pair of input points opposed to each other in such a manner that the input points face to respective sides of the ~~one of the~~selected sheet in a thickness direction ~~of the one of the sheets~~ to read the information through the input points.
15. (Currently Amended) An apparatus according to claim 1, wherein when viewed from a ~~as seen in a view~~ direction perpendicular to a thickness direction of ~~the one of the sheets~~ and a transferred direction of the ~~one of the sheets~~ transferred by the sheet transfer member, when selected sheet such that the sheet supporting surface area ~~extends straightly in~~ would be extendable in a direction parallel to a support line direction and which passes the information reading range, the relation is satisfied where:
- _____ α is an inclination angle between the support line direction and a and the tangential line of a ~~at the~~ boundary point of the transfer surface of the sheet

~~transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface,~~

_____L is a distance between the boundary point of the transfer surface of the sheet transfer member and the information reading point in the support line direction,

_____h is a distance between the boundary point of the transfer surface of the sheet transfer member and the sheet supporting surface area in a direction perpendicular to the support line direction, and

μ_{pg} is a frictional coefficient between the ~~one of the sheets~~ selected sheet and the transfer surface of the sheet transfer member, $\tan^{-1}(h/L) < \alpha < \tan^{-1}(1/\mu_{pg})$.

16. (Currently Amended) An apparatus for handling sheets comprising:

a movable sheet transfer member ~~being movable, and having including~~ a transfer surface contactable with for contacting a selected one of the sheets ~~so that the one of the sheets is transferred by the sheet transfer member and transferring the selected sheet,~~

a sheet supporting surface area ~~being contactable with the one of the sheet transferred by the sheet transfer member~~ for contacting the selected sheet, and

an information reader arranged to face ~~to the one of the sheet transferred by the sheet transfer member and having in the selected sheet and including:~~

_____an information reading range ~~including an information reading point, in which reading range an~~ within which information is ~~securely readable from the one of the sheets,~~ selected sheet, and

an information reading point at which information is read, said
information reading point being located within the information reading range,

~~wherein as seen in a view when viewed from a direction perpendicular to a~~
~~thickness direction of the one of the sheets and a transferred direction of the one of~~
~~the sheets transferred by the sheet transfer member, when of the selected sheet~~
such that the sheet supporting surface area would be extendable in a direction
~~extends straightly in parallel to a support line direction and which passes the~~
~~information reading range, the equations $J < (L^2/h)$, and $\alpha < \tan^{-1}(1/\mu_{pg})$ are satisfied~~
where:

_____ α is an inclination angle between the support line direction and a
tangential line of a boundary point of the transfer surface of the sheet transfer
member ~~from which boundary point the one of the sheets~~ where the selected sheet
starts to separate away from the transfer surface,

_____ L is a distance between the boundary point of the transfer surface of
the sheet transfer member and the information reading point in the support line
direction,

_____ h is a distance between the boundary point of the transfer surface of
the sheet transfer member and the sheet supporting surface area in a direction
perpendicular to the support line direction,

_____ μ_{pg} is a frictional coefficient between the ~~one of the sheets~~ selected
sheet and the transfer surface of the sheet transfer member, and

_____ J is a distance in the direction perpendicular to the support line
direction between the boundary point and an intersecting point between an
imaginary line passing the information reading point and extending perpendicular to

the support line direction and an imaginary line passing the boundary point of the transfer surface of the sheet transfer member and extending perpendicular to the tangential line of the boundary point of the transfer surface of the sheet transfer member, $J < (L^2/h)$, and $\alpha < \tan^{-1}(1/\mu pg)$.

17. (Currently Amended) An apparatus according to claim 1, further comprising a supplemental sheet supporting surface area opposed to the sheet supporting surface area, and contactable with the one of the sheets, and said supplemental sheet supporting surface area being movable with respect to the sheet supporting surface area in such a manner that the one of the sheets contacting the supplemental sheet supporting surface area and transferred by the sheet transfer member such that the selected sheet is urged in a direction toward the sheet supporting surface area.

18. (Currently Amended) An apparatus according to claim 17, wherein the supplemental sheet supporting surface area is opposed to the information reading range so that the selected sheet one of the sheets contacting the supplemental sheet supporting surface area and transferred by the sheet transfer member is urged in a direction toward the information reading range.

19. (Currently Amended) An apparatus according to ~~claims~~ claim 1, further comprising a supplemental sheet supporting surface area ~~being opposed to~~ opposing the sheet supporting surface area and contactable with the ~~one of the sheets, and selected sheet, said supplemental sheet supporting surface area~~

extending in such a manner that the ~~one of the sheets contacting the supplemental sheet supporting surface area and transferred by the sheet transfer member~~
selected sheet is guided toward the sheet supporting surface area.

20. (Original) An apparatus according to claim 1, wherein the sheet supporting surface area is curved.

21. (Currently Amended) An apparatus for handling sheets, comprising:
a movable sheet transfer member being movable, and having including a
transfer surface ~~contactable with for contacting a selected one of the sheets so that~~
~~the one of the sheets is transferred by the sheet transfer member and transferring the~~
selected sheet,

a sheet supporting surface area ~~being contactable with the one of the sheet~~
~~transferred by the sheet transfer member for contacting the selected sheet,~~

an information reader arranged to face to ~~the one of the sheet transferred by~~
~~the sheet transfer member and having in the selected sheet and including:~~

_____ an information reading range including an information reading point, in
~~which reading range an within which~~ information is securely readable from the one of
~~the sheets~~selected sheet, and

_____ an information reading point at which information is read, said
information reading point being located within the information reading range.

a distance detector arranged to face to ~~the one of the sheets so that facing~~
the selected sheet for measuring a value changing in accordance with a change in
distance between the ~~one of the sheets~~ selected sheet and the information reader is
~~measured by the distance detector,~~

wherein the information reader includes a light emitter for projecting a light to the ~~one of the sheets~~ selected sheet and a light receiver for receiving the light reflected by the ~~one of the sheets~~ selected sheet to read the information from the ~~one of the sheets~~ selected sheet, and

wherein the light emitter is controlled in accordance with the value ~~in such a manner that~~ such that an intensity of the light emitted by the light emitter is increased in accordance with the increase of distance between the one of the sheets and the information reader.

22. - 23. (Cancelled)

24. (Currently Amended) An apparatus for handling sheets, further comprising:

a movable sheet transfer member ~~being movable, and having including~~ a transfer surface ~~contactable with~~ for contacting a selected one of the sheets so that the ~~one of the sheets~~ is transferred by the sheet transfer member and transferring the selected sheet,

a sheet supporting surface area ~~being contactable with the one of the sheet transferred by the sheet transfer member~~ for contacting the selected sheet,

an information reader arranged to face ~~to the one of the sheet transferred by the sheet transfer member~~ the selected sheet and having ~~in including~~:

an information reading range including an information reading point, in which reading range an within which information is securely readable from the one of the sheets supported by the sheet supporting surface area selected sheet, and

an information reading point at which information is read, said
information reading point being located within the information reading range, and
a pneumatic blower for applying a pneumatic pressure to the selected sheet
~~one of the sheets in~~ such a manner that the ~~one of the sheets~~ selected sheet is
urged by the pneumatic pressure to be pressed against the sheet supporting surface
area.

25. (Currently Amended) The apparatus according to claim 1, wherein:

the sheet transfer member includes a drive roller and a driven roller mounted
along a clamping direction line;

α is an inclination angle between a support line direction and a tangential line
of a boundary point of the transfer surface of the sheet transfer member from which
boundary point the ~~one of the sheets~~ selected sheet starts to separate away from the
transfer surface;

the clamping direction line is inclined by the angle α causing an offset
between the drive roller and the driven roller.

26. (Currently Amended) The apparatus according to claim 1, wherein the
information recorded on the ~~one of the sheets~~ selected sheet is readable from the
~~one of the sheets in~~ the information reading range.

27. (Currently Amended) The apparatus according to claim 9, wherein the
information recorded on the ~~one of the sheets~~ selected sheet is readable from the
~~one of the sheets in~~ the information reading range.

28. (Currently Amended) The apparatus according to claim 24, wherein the information recorded on the ~~one of the sheets~~ selected sheet is readable from the ~~one of the sheets~~ in the information reading range.